

COMPUTED TOMOGRAPHY APPARATUS

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority benefit of Korean Patent Application No. 10-2015-0148339, filed on Oct. 23, 2015, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

BACKGROUND

[0002] 1. Field

[0003] Embodiments of the present disclosure relate to a computed tomography apparatus having an improved rotational structure.

[0004] 2. Description of the Related Art

[0005] A medical imaging apparatus is an apparatus configured to obtain an inside structure of a subject in the form of an image. The medical imaging apparatus is referred to as a non-invasive apparatus, and is provided to show a user with detailed structural information, internal tissues, and flow of fluid at an inside of a body by photographing and processing such. The user such as a physician may be able to diagnose the health status and disease of a patient by use of the medical images being output from the medical imaging apparatus.

[0006] As for the medical imaging apparatus configured to photograph the subject by radiating x-rays at the patient, a Computed Tomography (CT) is typically present. The Computed Tomography as such is capable of reconstructing images by use of a computer by penetrating the x-rays from a number of directions, and since the penetrability of the x-rays may be different by the tissue structuring the subject, an inside structure of the subject may be able to be visualized in the form of images by use of attenuation coefficient, which is expressed in numeric figures.

[0007] The Computed Tomography (CT) is capable of providing tomographic images with respect to the subject, and when compared to an x-ray apparatus in general, is capable of expressing the inside structure of the subject, such as a kidney, lungs, or any other organ, without overlapping, and thus is widely used as to provide precise diagnosis of a disease.

SUMMARY

[0008] Therefore, it is an aspect of the present disclosure to provide a computed tomography apparatus provided with a gantry configured to rotate along a rail having the shape of a ring.

[0009] Additional aspects of the disclosure will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the disclosure.

[0010] In accordance with an aspect of the present disclosure, a computed tomography apparatus includes an x-ray source to radiate x-rays; an x-ray detector to detect the x-rays; a gantry at which the x-ray source and the x-ray detector are mounted; and a rail provided in the shape corresponding to an outer side surface of the gantry, and the gantry is configured to rotate along an inner side surface of the rail.

[0011] A plurality of driving wheels may be provided in between the inner side surface of the rail and the outer side surface of the gantry.

[0012] The driving wheel may be mounted at the outer side surface of the gantry.

[0013] The driving wheel may be provided to move along the rail based on a driving force received from a driving source.

[0014] The rail may be provided in the shape of a ring.

[0015] The computed tomography apparatus may further include a housing forming an exterior appearance of the computed tomography apparatus, and the rail may be mounted at the housing.

[0016] The computed tomography apparatus may further include a housing forming an exterior appearance of the computed tomography apparatus, and the rail may be formed at an inner side surface of the housing.

[0017] The rail may be provided with a space formed thereto to which at least a portion of the gantry is inserted.

[0018] The rail may be provided in a single unit.

[0019] The gantry may be provided as to be rotated while magnetically levitated.

[0020] The outer side surface of the gantry may be provided with a first magnetic unit, and the inner side surface of the rail may be provided with a second magnetic unit.

[0021] The x-ray source and the x-ray detector may be provided to face each other.

[0022] In accordance with another aspect of the present disclosure, a computed tomography apparatus includes a gantry having the shape of a cylinder at which an x-ray source and an x-ray detector are mounted to face each other, and rotatably provided; a rail extended along an outer circumference of the gantry, and provided to guide the rotation of the gantry; and a driving wheel provided in between the gantry and the rail.

[0023] The driving wheel may be provided to be rotated based on a driving force received from an outside driving source.

[0024] The driving wheel may be provided in a plurality of units, and may be mounted at an outer side surface of the gantry.

[0025] The rail may be provided in a single unit along an outer circumferential surface of the gantry.

[0026] In accordance with still another aspect of the present disclosure, a computed tomography apparatus includes a gantry at which an x-ray source and an x-ray detector are mounted; and a rail extended while corresponding to an outer circumferential surface of the gantry, and the gantry is provided to be rotated while magnetically levitated with respect to the rail.

[0027] The gantry may be provided in the shape of a cylinder, and the rail may be provided in the shape of a ring while wrapping around at least a portion of the gantry.

[0028] The x-ray source and the x-ray detector may be positioned as to face each other.

[0029] The rail may be provided in a single unit.

[0030] In accordance with still another aspect of the present disclosure, a computed tomography apparatus includes a gantry at which an x-ray source and an x-ray detector are mounted to face each other; a driving wheel mounted at an outer circumferential surface of the gantry; and a rail extended along the circumference of an outer side of the gantry, and provided as to have the driving wheel drive.

[0031] The rail is provided in a single unit.

[0032] As is apparent from the above, the computed tomography apparatus in accordance with an embodiment of